It appears that the relation $v=\sqrt{h}$ and also the formula of Hellmann, $v/v_1=\sqrt[3]{h/h_1}$ yield similar results. We can write this last equation as

$$\frac{\log v-\log v_1}{\log h-\log h_1}=c$$

which can be rewritten as

$$\log v-c\log h=\log v_1-c\log h_1=C.$$

If C approaches zero we obtain formula 2. These formulae can only be used as interpolation formulae and are limited to the reduction of observations of wind.—*C. L. M.*

DAILY MARCH OF WIND VELOCITY AT 30 M. ABOVE OSTEND AND 90 M. ABOVE BRUGGE.

By ALBERT PEPPLER.

[Abstracted from *Meteorologische Zeitschrift*, March–April, 1919, vol. 36, pp. 90–93.]

During the war measurements of wind velocity were made both at Ostend and at Brugge. The Ostend curve is a relatively simple one, showing a minimum at 3 a. m., a steady increase in speed to 3 p. m., and a quite steady fall again to the minimum. This period is especially marked on hot summer days. The Brugge curve is more complex. The principal minimum occurs at about 8 a. m., after which there is a steady increase to 1 p. m., followed by a fall to a secondary minimum at 8 p. m., and then a rise to the secondary maximum at 1 a. m. Thus, there are two 12-hour periods which combine to give wide variations in the daytime and secondary variations at night. It should also be noted that the higher anemometer gives speeds of smaller magnitude during the day and of greater magnitude during the night than the lower one.—*C. L. M.*

THE DIURNAL VARIATION OF WIND VELOCITY IN THE FREE AIR.

By J. ROUCH.

[Abstracted from Comptes Rendus, Paris Acad. Aug. 11, 1919, pp. 293–295.]

In the upper layers of the atmosphere, different diurnal variations of wind velocity are observed from those in the lower layers. The speed is a maximum during the night and a minimum during the day. This has been observed by Angot on the Eiffel Tower and is substantiated by numerous mountain stations.

Certain pilot balloon observations made during the summer of 1918 have been grouped by time of day and the mean differences between the two times taken for a given level. These were grouped for morning and afternoon. In Table 1 the plus sign (+) denotes an afternoon wind greater than a morning wind; the minus sign (−) indicates an afternoon wind less than the morning wind.

This table shows that the wind speed in the morning is greater than the afternoon wind at 200 meters at Bayonne, Cette, and Rochefort; between 200 and 400 meters at Havre; between 400 and 600 meters at Oran; and, as has been mentioned, at Paris, at an altitude of 300 meters, it is a maximum during the night and a minimum during the day. This difference is noted to an altitude of 2,000 meters, although it is a maximum at about 1,000 meters. Above 2,000 meters it appears that the time of day does not make much difference, although there is a slight indication that the winds of afternoon above that level are greater than those of the morning. Above the 3,000-meter level observations are insufficient for drawing conclusions; below, it is believed that the above-stated relations are valid.—*C. L. M.*

TABLE I.

Stations.	Times.	Altitudes (meters).											
		0	200	400	600	800	1,000	1,500	2,000	2,500	3,000	3,500	4,000
Oran (58)[1]	7 a. m.–4 p. m.	+4.7	+2.7	+0.4	−0.9	−1.7	−1.4	−0.4	−0.2	+0.4	+1.8	.....	.....
Bayonne (44)	7 a. m.–1 p. m.	+3.7	−0.4	−2.3	−2.1	−0.9	−0.4	−0.3	−1.1	−0.9	−0.1	.....	.....
Cette (69)	7 a. m.–1 p. m.	+1.2	−0.8	−2.2	−1.6	−1.5	−1.7	−1.3	.....	.....	.....	.....	.....
LeHavre (21)	7 a. m.–1 p. m.	+2.5	+0.5	−1.8	−2.0	−1.5	−1.0	−1.2	.....	.....	.....	.....	.....
Rochefort (36)	7 a. m.–12 m.	+1.5	−4.6	−3.6	−3.2	−2.1	−0.8	−0.7	−0.8	−0.2	0.0	.....	.....
Saint-Cyr (40)	7 a. m.–2 p. m.	+1.7	.....	.....	.....	.....	−0.8	.....	+0.6	.....	+0.5	.....	+0.3

[1] Numbers in parentheses indicate number of observations.

THE INFLUENCE OF THE VELOCITY OF THE WIND ON THE VERTICAL DISTRIBUTION AND THE VARIATIONS OF THE METEOROLOGICAL ELEMENTS IN THE LOWER LAYERS OF THE ATMOSPHERE.

By C. E. BRAZIER.

[Comptes Rendus, Paris Acad. Sci. January 20, 1919, pp. 179–182.]

The barometric pressure at the ground level, calculated from observations made on the Eiffel Tower, is lower than the observed pressure. When the mean wind for 24 hours is 0.9 meters per second on the ground, and 4.4 meters per second at the top of the tower, and the surface pressure was 761.4 mm. and the tower pressure was 736.5 mm., the computed ground pressure was 761.3 mm., thus showing a difference of 0.1 mm. In the case of a moderate wind (mean velocity, base 2.1, top 8.1 m/s) this difference is 0.2 mm., and in the case of a strong wind (mean velocity, base 3.7, top 11.5 m/s) it increases to 0.3 mm., showing clearly that the difference increases with the speed of the wind.

The discussion is closed with the following three conclusions relative to other meteorological relations: "1st. For a given diurnal variation of the amount of heat received by the earth from the sun, the amount of the diurnal variation of air temperature in the immediate neighborhood of the ground, is greater for a gentle wind than for a strong one.

"2d. Except at a certain level, the altitude of which may vary with the season and the place of observation and which, in April and above Paris, is lower than 200